

SCIENTIFIC NOTE

Defensive Behavior of Male Bees about Plants not Visited by Their Females (Hymenoptera, Apoidea).—Territorial defense of plants not visited by the female has been mentioned for males of a number of species of bees. For example, we have previously reported this behavior among representatives of such diverse families as Colletidae and Oxaeidae (Linsley and Cazier, 1963, *Canadian Ent.*, 95: 547–556) and Xylcopidae (Linsley, 1965, *Pan-Pacific Ent.*, 41: 158–161). In these instances, *Ptiloglossa jonesi* Timberlake and *Protoxaea gloriosa* (Fox) were guarding plants of *Cucurbita* and driving away or seriously inhibiting the regular bee visitors and *Xylcopa darwini* Cockerell was “protecting” plants of *Alternanthera*, the flowers of which are not attractive to insects. Territoriality and scent marking have recently been studied in *Centris* (Anthophoridae) in Jamaica (Raw, 1975, *Behavior*, 54: 311–321). Males of *C. crassipes* were recorded establishing territories at *Crotalaria* and *Citrus*, the flowers of which were not visited by the female bees, and apparently marking their territories, possibly from glands in the hind femora.

During 1975, incidental to other studies, a few additional but casual observations were made on territorial behavior of male bees at plants not visited by the females. At Chebucto, Cave P.O., Westmoreland, Jamaica, on 23 and 24 March, 1975, between 0945 and 1100 hrs., males of *Centris crassipes* F. Smith (det Snelling) established territories about individual rose bushes four to five ft. tall in a large garden. The males faced the plants at a distance of 20–30 inches, and 10–15 inches below the level of the top of the bush, usually poising on one side, but periodically darting back and forth to look for and repel intruders and actually guarding the whole plant. Similar behavior in males of *Centris trigonoides subtarsata* Cockerell (det Snelling) was noted at Tikal, El Petan, Guatemala, 30 March 1975, at 1115 hrs., about an unidentified purple flowered vine, the blossoms of which were 6 to 8 ft. above the ground. In each case the males periodically alighted on the stems of the plant and rubbed their hind legs against them. In neither case were the plants being visited by the females nor were their pollen plants growing in the immediate vicinity.

On 31 July 1975, at a site on the outskirts of Douglas, Cochise County, Arizona, sampling flowers of *Cucurbita foetidissima* for pollinators was constantly interrupted by a male of *Ptiloglossa jonesi* which guarded the plant against all visitors, in particular two species of *Xenoglossa* (*X. angustior* Cockerell and *X. strenua* Cresson) and *Peponapis pruinosa* (Say), as well as other male *Ptiloglossa* which invaded the territory and attempted to displace him. The first male appeared just after 0500 hrs., fifty minutes before sunrise (temp. 18.5°C). When it was clear that he was interfering with the sample of Cucurbit visitors he was captured, but was soon replaced by another. This procedure was repeated periodically until 0630 when the last male was removed. Most of the males set up their territories in the same site, where the plants were growing over a pile of stones and thus highest above ground level. However, they did not poise facing one position but oriented in several directions, perhaps influenced by movements of the observer. When undisturbed, they periodically alighted on the *Cucurbita* leaves and made a rubbing motion with the legs. Females of *Ptiloglossa jonesi* were gathering pollen from *Solanum eleagnifolium* the nearest clumps of which were 200 yards distant.

These observations suggest that the conformation of the plant, at least when females are not active nearby, may be a determining factor in the establishment of male territories near plants which are not being visited by their females.—E. GORTON LINSLEY, *Division of Entomology and Parasitology, University of California, Berkeley 94720.*

Biological Observations on *Apiomerus crassipes* (F.) (Hemiptera: Reduviidae).—Among the more interesting aspects of the biology of predaceous insects are the site of capture and specific identity of their prey. Perhaps due to the readiness of *Apiomerus crassipes* (F.) to drop prey and take flight when approached by an observer, relatively few records of prey have been reported for the species. The available records have been summarized by Swadener and Yonke (1973, *Ann. Entomol. Soc. Amer.*, 66: 188–196), and to these should be added the record of *Ceratina sequoiae* Michener reported by Daly *et al.* (1967, *Ann. Entomol. Soc. Amer.*, 60: 1273–1282) and that of *Pogonomyrmex badius* (Latr.) recently reported by Morrill (1975, *J. Georgia Entomol. Soc.*, 10: 50–51). In total, only 12 species of 10 families of Hemiptera, Coleoptera, and Hymenoptera have been recorded to date as prey of *A. crassipes*. This paper records seven additional species in two additional families as prey of this assassin bug.

On 11 and 12 July 1962, while collecting in an old field 2 miles southwest of McLeansboro, Illinois, I took three females of *A. crassipes* from the stems of blossoming *Pycnanthemum* sp. These individuals were feeding on the following: 2 females, *Macrosiagon dimidiatum* (F.) and one male, *M. limbatum* (F.) (Coleoptera: Rhipiphoridae). I returned to the old field near McLeansboro on 14 July 1963 and observed the following for *A. crassipes* adults (all on blossoming *Pycnanthemum* spp. unless stated otherwise): two females feeding on workers of *Apis mellifera* L. (Hymenoptera: Apidae); two males feeding on males of *Sphecodes dichrous* Smith (Hymenoptera: Halictidae); female feeding on female *Halictus rubicundus* (Christ) (Halictidae); male feeding on male *Chauliognathus marginatus* (F.) (Coleoptera: Cantharidae); female of mating pair feeding on female *C. marginatus* (F.); and female feeding on female *Rhipiphorus fasciatus* (Say) (Coleoptera: Rhipiphoridae) on blossoming *Solidago* sp. I had occasion to visit the McLeansboro site again on 5 June 1965 and while there I collected a female *A. crassipes* from blossoming *Euphorbia* sp. (probably *E. corollata*), feeding on a female *Augochloropsis sumptuosa* (Smith) (Halictidae).

In Trigg County, Kentucky, on 21 July 1966 I collected a female *A. crassipes* feeding on a female *Halictus ligatus* Say, and on 15 July 1967, while collecting in a prairie remnant 1 mile northeast of Edgewood, Illinois, I collected a mating pair of *A. crassipes* on blossoming *Pycnanthemum flexuosum*. The female was feeding on an *Apis mellifera* worker.

The specimens cited herein will be deposited in the collection of the Section of Faunistic Surveys and Insect Identification of the Illinois Natural History Survey, at Urbana, Illinois.

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